



Nano-formulated Drug Candidates for the Treatment of Breast Cancer

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Abstract:

Breast cancer is one of the deadliest and most frightening diseases for women worldwide. Scientists all over the world have devoted an enormous time and effort to understanding the causes of this deadly disease and how to prevent and cure the disease. The past and on-going research studies concentrated mainly on either mono- or combinational therapy approaches in the fight with breast cancer. While considerable success has been attained with even the most aggressive breast cancer subtype, triple-negative breast cancer, more effective approaches are still being searched. The main concern with all these therapies is that while trying to kill just the cancer cells, the selected treatment option may also damage the healthy cells and the cancer-cell free tissue neighboring the tumor tissue. Therefore, cancer researchers have been favoring targeted therapies for the well-being of breast cancer patients. Nanotechnology has taken over traditional approaches where engineered nano-structures target directly the breast cancer cells while preserving the healthy cells and reducing the toxic side effects of the treatment. The previous high-impact relevant research results and implications from both preclinical and clinical perspectives have been collected to draw conclusive remarks for devising effective nanotherapies and therapeutic nanoproducts for the treatment of breast cancer. With these targeted therapies, the anti-tumor efficacy of the administered nano-drugs can be enhanced.

The purpose of the current study is to further explore the most current nanotechnology tools and products effectively targeting cancerous cells and tumor tissues of breast cancer patients. It is envisioned that the current methodologies and therapies would make a valuable impact on the on-going efforts to cure the disease. This study would present an elaborative summary of the most 'beyond prevalent' approaches to help scientists and clinicians gain a broader aspect of the disease and help new innovative approaches to come to mind in the fight with this deadly disease.

Key Words: Nano-formulated Drugs, Breast Cancer, Nano-therapies, Nano-drugs.

Biography:

Dr. Goktas graduated from the Chemical Engineering Department, Ege University, Turkey in 2001 and received her Ph.D. degree in Chemical Engineering from the University of Oklahoma, USA in 2011. She then conducted a short-term post-doctoral study at Yeditepe University, Turkey where she had the opportunity to work with a group of chemists on a cutting-edge



project funded by the European 7th Frame Programme. During this appointment, she developed innovative surface modification strategies for metal oxide nanoparticles to reduce their toxicity for clinical applications. She used various human cancer cell lines in order to test the efficacy of these newly-created nanomedicines. She was then appointed as a post-doctoral fellow at Koc University, Turkey where her major research focus was on the genetic and biomechanical evaluation of the developing cardiovascular system. She has several publications as the lead author. She presented her research works at numerous national and international conferences. She has served as a peer-reviewer for prestigious journals such as the Journal of the Mechanical Behavior of Biomedical Materials and Anti-Cancer Agents in Medicinal Chemistry. She is an active member of the American Association of Pharmaceutical Scientists (AAPS) and the American Association for Cancer Research (AACR). She has also served as an abstract screener for important meetings such as PharmSci 360 (Annual Meeting of the AAPS) and Summer Biomechanics, Bioengineering and Biotransport Conference (SB3C). Dr. Goktas has recently been appointed as a Senior Scientist at Sanford Burnham Prebys Medical Discovery Institute, USA (Tumor Initiation and Maintenance Program) where she will conduct cutting-edge breast cancer research

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